

PHYSICS

Future H-Bomb Power

► PEACEFUL USE of the H-bomb reaction is many years in the future, the Atomic Energy Commission assured Congress in its Nineteenth Semiannual Report.

After confirming existence of research on controlled thermonuclear research at five institutions, the AEC said many years of intensive theoretical and experimental research will be needed before the first form of a machine using light elements as atomic fuel can be produced.

Human cancer is being attacked with protons, hearts of hydrogen atoms, in experiments reported from the University of California at Berkeley. Cyclotron-produced protons were used on 30 patients, including 28 in advanced stages of cancer of the sort that may be benefited by pituitary inactivity.

The proton treatment caused good suppression of pituitary function and a number of the patients obtained considerable relief.

Doses of ionizing radiation that produce moderate incapacity can reactivate latent epidemic typhus infections, research on monkeys at the Johns Hopkins University School of Public Health, Baltimore, has shown. The AEC suggested the possibility this might be a health hazard complicating the period following very heavy exposure of densely populated areas to nuclear bomb radiation.

Heavy ionizing radiation may actually improve the learning process, at least in rats. Irradiated animals at the University of Nebraska were reported to learn more rapidly and forget more slowly in standard puzzle situations for rats. This appears to be not a true basic improvement in the learning process, but because the injured animals are less subject to incidental distractions.

The world's first pound of the extremely rare element, europium, has been produced at Oak Ridge National Laboratory, Tenn. An extraction process using tributyl phosphate and nitric acid was used to produce 500 grams, the largest known single quantity of this element. Europium will be

used in control rods in atomic power plants.

Yttrium, another rare earth metal, will be available in relatively large quantity, since 150 pounds of its pure oxide is being converted to metal at Ames Laboratory, Ames, Iowa.

A way to mix atomic fuel with molten metal for use in power plants of the future was reported from Argonne National Laboratory, Lemont, Ill. A slurry can be made by suspending uranium dioxide in liquid sodium-potassium alloy.

By using radiation to induce mutations in plants, the AEC reported, scientists at Brookhaven National Laboratory, Upton, N. Y., have produced a high yield wheat that is resistant to one form of wheat rust, a variety of rice with short strong straw to withstand wind damage, and a disease-resistant flax.

Science News Letter, February 11, 1956

Farm tractors have more than doubled in number in the last 10 years.

Questions

BIOCHEMISTRY—How does food eaten affect an animal's brain? p. 89.

BIOLOGY—How can sex of unborn humans be determined? p. 85.

FORESTRY—What disease of white pines is being successfully beaten? p. 93.

GENERAL SCIENCE—What is one authoritative estimate concerning when atomic energy will be used every day by average citizens? p. 84.

METALLURGY—How could certain kinds of airplane accidents be avoided? p. 89.

SURGERY—Why should walking canes be more generally used? p. 88.

Photographs: Cover, Argonne National Laboratory; p. 83, U. S. National Committee for International Geophysical Year; p. 85, Landrum B. Shettles; p. 87, U. S. Army; p. 90, Armed Forces Medical Library; p. 96, Luria Courmand, Inc.

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